

Application No.: 10/717,331

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DEC 18 2006

Docket No.: NGW-012

REMARKS

Upon entry of this amendment, claim 1 is amended to correct a typographical error and to provide better punctuation. No new matter is added. Claims 1-3 and 5-9 are pending, of which claims 1 and 5 are independent. Applicants respectfully submit that the pending claims define over the art of record.

Applicants thank the Examiner and her supervisor, Patrick Ryan, for conducting a telephone interview with Applicants' attorney. As discussed during the interview, none of the cited references teaches or suggests a fuel cell system box disposed beneath the vehicle floor that houses the various claimed components. The Examiners noted that they will perform an updated search to determine if other art exists. If not, it is our understanding that the claims define patentable subject matter. As requested during the interview, we provide below additional comments regarding the reasons why the claimed invention define over the art of record.

Claim Rejections Under 35 U.S.C. §103

The Examiner maintains the rejection of claims 1-3 and 5-9 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 5,641,031 to Riemer et al. (hereafter "Riemer") in view of United States Patent No. 6,394,207 to Skala (hereafter "Skala") and further in view of United States Patent No. 6,223,844 to Greenhill (hereafter "Greenhill"). Applicants respectfully submit that the combination of the Riemer reference, the Skala reference, and the Greenhill reference do not teach or suggest a fuel cell system box disposed under a floor of the vehicle as required by independent claims 1 and 5. The combination of the prior art references also do not teach or suggest having a fuel cell, a temperature regulating unit, a fuel supply regulating unit, a humidification unit, a fuel cell output setting unit, and an exhaust unit, all under a floor of the vehicle and accommodated in the fuel cell system box, as required by independent claim 1.

The Riemer Reference

The Riemer reference teaches an arrangement of components in an electric vehicle. Each component is designed as a separate unit so that the multiple components can be distributed over the available installation positions. A safety compartment is formed by beams 4, 5, 6, 7 and the fuel cell stack and the hydrogen temporary reservoir are preferably arranged in this safety

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compartment.

However, the Riemer reference does not teach or suggest a fuel cell system box disposed under a floor of the vehicle. In contrast, independent claims 1 and 5 require a fuel cell system box disposed under a floor of the vehicle. Furthermore, the Examiner alleges that moistener 35 in the Riemer reference is equivalent to the humidification unit of the claimed invention and that the current controller 14 is equivalent to the fuel cell output setting unit of the claimed invention, but both the moistener 35 and the current controller 14 are disposed above a floor of the vehicle as shown in Fig. 1a and not under a floor of the vehicle, as required by independent claim 1.

The claimed arrangement provides significant advantages that are not taught or suggested in the prior art. For example, the fuel cell system box as recited in both claims 1 and 5 protects the fuel cell and other apparatuses from exposure to external inputs, such as water, mud, and chipping, and the serviceability of these apparatuses for maintenance are improved. Additionally, the fuel cell system box is disposed underneath a vehicle that prevents damages from a head-on or rear-side collision of the vehicle. In addition, various components are disposed under the floor of the vehicle and accommodated in the fuel cell system box, so more space is available in the passenger compartment and the luggage compartment. See Page 22, second full paragraph and Page 23, first full paragraph.

Applicants respectfully submit that the Riemer reference cannot provide the same advantages as the claimed invention as certain components, such as moistener 35 shown in Fig. 1a, are installed at a position that is above a floor of the vehicle that results in the reduced space in the passenger compartment and the luggage compartment.

Additionally, the Riemer reference does not teach or suggest that the humidification unit is grouped with the fuel supply regulating unit to form a second group, and that the fuel cell and the second group is aligned in that order from a front to a rear of the vehicle, as required in independent claim 1. The advantages of having the humidification unit in the vicinity of the fuel cell, the length of the piping system connecting the humidification unit with the fuel cell is decreased so that hydrogen humidified by the humidification unit can be supplied to the fuel cell before the hydrogen is cooled. Hence, fuel control response is improved and hydrogen can be supplied to the fuel cell before water that is supplied through humidification is condensed. See Page 25, last paragraph (continues to Page 26).

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In contrast, the moistener 35 in the Reimer reference is disposed far away from the fuel cell stack 15 and hence the advantages of the invention cannot be achieved by the Riemer reference.

The Skala Reference

The Examiner looks to the teachings of the Skala reference and the Greenhill reference to compensate for the deficiencies of the Riemer reference. However, even in combination, the references fail to teach or suggest each and every element and limitation of the claims.

The Examiner alleges that controller 42 in the Skala reference is equivalent to the temperature regulating unit of the claimed invention. However, the Skala reference is silent regarding the position of the controller 42 with respect to the floor of the vehicle. Hence, the combination of the Skala reference and the Riemer reference do not teach or suggest a temperature regulating unit being disposed under a floor of the vehicle. In addition, the Skala reference is silent regarding a fuel cell system box.

Accordingly, Applicants respectfully submit that the Skala reference does not teach or suggest a fuel cell system box disposed under a floor of the vehicle as required by independent claims 1 and 5. The Skala reference also does not teach or suggest having a fuel cell, a temperature regulating unit, a fuel supply regulating unit, a humidification unit, a fuel cell output setting unit, and an exhaust unit, all under a floor of the vehicle and accommodated in the fuel cell system box, as required by independent claim 1.

The Greenhill Reference

According to the Examiner, because the Greenhill reference teaches bypass valves 138, 19 to divert the oxidant stream away from the fuel cell stack if desired, and exhaust manifolding 215 to directing fluids away from the fuel cell stacks, it would be obvious to modify the system of Riemer to include a fuel supply regulating unit and an exhaust unit. However, the Greenhill reference does not teach or suggest a fuel cell system box disposed under a floor of the vehicle as required by independent claims 1 and 5. The Greenhill reference also does not teach or suggest that the fuel supply regulating unit and exhaust unit are under a floor of the vehicle and accommodated in the fuel cell system box, as required by independent claim 1. Additionally, the Greenhill reference does not teach or suggest that the bypass valves 138, 19 are in between the

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exhaust manifolding 215 and the fuel cell stack. Hence, the Greenhill reference cannot teach or suggest that the fuel supply regulating unit is in between the exhaust unit and the fuel cell stack in a longitudinal direction of the vehicle, as required by independent claim 1.

Additionally, there is no motivation to combine the Greenhill reference with the Reimer reference. The teachings of the Greenhill reference suggest that fewer motors should be used to drive separate apparatuses in the vehicle and hence a mechanism including external belt drives, internal gear, and chain drives, are used so that a single motor 220 can drive many apparatuses, such as air compressor 230, pump 240, air break compressor 264, alternator 266, air conditioning compressor 274 and pumps 284. See Fig. 3 and related text. Hence, the teachings of the Greenhill reference require grouping all these apparatuses in one location so that they can all be coupled to one motor.

In contrast, the Reimer reference teaches that each component is designed as a separate unit so that the multiple components can be distributed over the available installation positions. In fact, the grouping of the apparatuses to couple to one motor as taught by the Greenhill reference will defeat the objective of the Reimer reference to build different apparatuses as separate units and distribute them over available installation positions. Hence, there is no motivation to combine the Reimer reference with the Greenhill reference.

Accordingly, Applicants respectfully submit that the Reimer reference, the Skala reference, and the Greenhill reference, either alone or in combination, do not teach or suggest a fuel cell system box disposed under a floor of the vehicle as required by independent claims 1 and 5. The combination of the prior art references also do not teach or suggest having a fuel cell, a temperature regulating unit, a fuel supply regulating unit, a humidification unit, a fuel cell output setting unit, and an exhaust unit, all under a floor of the vehicle and accommodated in the fuel cell system box, as required by independent claim 1.

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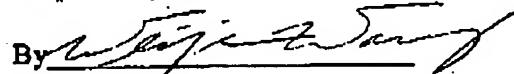
CONCLUSION

In view of the above statements, Applicants believe the pending application is in condition for allowance.

Applicants believe no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. NGW-012 from which the undersigned is authorized to draw.

Dated: December 18, 2006

Respectfully submitted,

By 

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